Natural Resources

A Resource Guide of
2000-2020 Bryan Comprehensive Plan, City of Bryan, Texas

Introduction

The purpose of the Natural Resources Resource Guide is to identify and ensure long term conservation and protection of the community's environmental resources. It identifies the significant features of the environment and describes major natural resources. Sources of information include United States Department of Agriculture, United States. Army Corps of Engineers, Texas Natural Resources Conservation Commission (TNRCC) the United States Fish and Wildlife Service and *1993 Bryan Comprehensive Plan*. Major environmental resources, constraints and strategies are addressed for each feature. Recommended policies, standards, and programs are presented to enhance and conserve the community's natural resources.

Environmental Resources

Bryan and Brazos County are endowed with many environmental resources—rivers, lakes, creeks, woodlands and wetlands. These significant natural features are both resources and constraints to development

Climate

Bryan and Brazos County enjoy a warm temperate, humid continental climate. Temperatures range from an average daily minimum of 42 degrees Fahrenheit in January to an average daily maximum of 95 degrees Fahrenheit in July. Average rainfall is 39.2 inches per year. Summers are long, warm and dry, while winters are short and mild. The average frost-free season is 260 days in length.

Geology

The geology of Brazos County consists primarily of unconsolidated sedimentary sands and clays, which are the parent material of most of the soils of the county. The major geologic formation underlying the county is the Yegua formation of the Eocene Claiborne group. Important mineral resources include sand and gravel, clay, natural gas and oil. Oil and gas wells are dispersed in many locations. Lignite is an important regional resource.

Soils

Soils in the Bryan area consist primarily of shallow claypan soils of the Lufkin-Tabor soil association. Soils typically have a 4 to 12 inch thick, grayish brown to pale brown fine sandy loam surface layer overlying dense, very slowly permeable claypan that restricts the utility of the soils. Level to gently sloping uplands are soils of the Lufkin and Tabor series, which are acidic with low productivity. Reddish, calcareous soils of the Brazos River floodplains are fertile, productive and rarely inundated, making them suitable for pasture and livestock farming. Dark soils of the prairie uplands are moderately fertile and somewhat droughty, suited for growing cotton, corn, sorghum and oats. Deep sands and shallow claypan soils of the post oak savannah have low natural fertility and are suited for pasture and woodlands. Low permeability and shrink-swell potential are limitations to development on clay and sandy-

clay soils. For additional information on soil suitability, see the *Brazos County Soil Survey* published by the U.S. Department of Agriculture, Natural Resources Conservation Service.

Topography

The major topographic land forms of Brazos County include level to gently rolling upland prairies and post oak savannahs, with average slopes of one to three percent. Bottomland areas include floodplains along the Brazos and Navasota Rivers and their tributary streams, creeks and eroded gullies. Surface elevations in the County range from 109 to 308 feet above mean sea level. Bryan is on the topographic divide between the watersheds of the Brazos River to the west and the Navasota River to the east. Gullied washes and steeply sloping embankments are common along watercourses.

Water Resources

Surface water resources in Brazos County include the Brazos and Navasota Rivers and their tributaries. Major tributaries in the Bryan area include Thompsons Creek, which drains to the Brazos River, and Carters Creek, which drains to the Navasota River. Bryan Utility Lake, Country Club Lake and Finfeather Lake are also important water impoundments. Other surface water features include numerous small ponds and farm tanks. Large reservoirs have been proposed for development on the Navasota River.

Ground water resources include water bearing geologic formations found at several levels in the underground strata. Individual water wells are typically 150 to 180 feet in depth. Municipal water supply wells are 500 to 800 feet deep.

Vegetation

Native plant communities include tall-grass prairie, post oak savannah and bottom land hardwoods. Grasses on the tall-grass prairie include bluestems, indian grass, switchgrass, and gramas, along with winter wildrye and fescue grasses. Post oak savannah is characterized by open stands of post oak and blackjack oak trees in association with tall bunch grasses, which are the same as the prairie grasses with the addition of purpletop. Bottom land hardwood forests consist of oak, ash, elm, pecan, willow, and sycamore trees.

Environmental Regulatory Requirements and Programs

Federal and state environmental regulations present requirements applicable to City programs and facilities. Programs and policies should be adopted by the City in the future to assure compliance. The City of Bryan should utilize the available program assistance information provided by the TNRCC and other state and federal agencies. Information is readily available for a number of environmental topics and programs. Applicable requirements and programs are summarized in the following paragraphs.

Endangered and Threatened Species

The Texas Natural Heritage Program (TNHP) Information System of the Texas Parks and Wildlife Department maintains a compilation of information about endangered, threatened and sensitive species for the State of Texas. Available information of a general nature for Brazos County and the Bryan area was obtained and reviewed for this comprehensive plan. The TNHP Information System at the Texas Department of Parks and Wildlife in Austin will review specific projects on an individual basis and can provide site-specific assessments based upon the most up-to-date information available from their records.

Brazos County is home to only one endangered plant species, the Navasota ladies'-tresses. Presently there is no critical habitat proposed or designated for this endangered species. The City of Bryan should avoid development or other activity that detrimentally impacts the habitat areas of threatened or endangered species.

Hazardous Waste

The Resource Conservation and Recovery Act (RCRA) mandates that hazardous wastes will be treated, stored, and disposed of so as to minimize the present and future threat to human health and the environment. This comprehensive national program seeks to encourage source reduction, high-technology treatment, and secure long-term disposal of hazardous wastes. There are many companies and individuals in the United States who generate over 275 million tons of hazardous waste each year that must comply with the RCRA regulatory program.

RCRA defines hazardous waste as a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may:

- Cause or significantly contribute to an increase in mortality or a serious irreversible or incapacitating reversible illness; or
- Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

The Bryan area is the site of 15 facilities depositing hazardous waste. These sites are inventoried and monitored by the Environmental Protection Agency (EPA) under RCRA regulations on a routine basis. The facilities identified as hazardous waste contributors are either commercial or industrial land uses. Identified areas are shown in **Figure 2 Site Assessment Report Overview Map** and in a detailed report available from the City. The report was prepared by Vista Information Systems, an environmental research firm.

Toxic Substances

The Toxic Substances Control Act (TSCA) regulates the health and environmental effects of chemical substances and mixtures. The act requires persons and companies to provide data on TSCA-regulated chemicals that they manufacture, process, distribute, use or dispose of. The purpose of the TSCA is to regulate the chemicals before they are released into commerce.

Two of the sites identified in Bryan as contaminated by toxic substances are Finfeather Lake and Country Club Lake in the southeast portion of Bryan. The two lakes were contaminated by toxic substances discharged by industries located upstream in the watershed. The lake bottom sediments contain arsenic but the water is generally arsenic free, so activities that would disturb the sediments must be avoided. The lakes are closed to boating, fishing, swimming, and all other contact activities. Finfeather Lake is being monitored by Elf-Atochem in conformation with a plan approved by the Texas Natural Resources Conservation Commission (TNRCC). TNRCC is reviewing an abatement plan to remediate the silt in the bottom of each of the two lakes. Before undertaking regulatory action, the TSCA requires the EPA to balance the economic and social benefits derived from the use of a chemical against that chemical's identified risks. The facilities identified as hazardous waste contributors in Bryan are either commercial or industrial land uses.

The City of Bryan should consider the types of waste that will be emitted by potential incoming businesses and industries. A standard of the acceptable levels of hazardous and municipal waste that the City will accept should be established and used as a guideline when attracting new business.

Superfund Sites

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was designed to respond to situations involving the past disposal of hazardous substances. CERCLA provides the EPA the authority to clean up hazardous waste sites following mandated procedures and standards. One of the most important features of CERCLA is the creation of the Hazardous Substance Superfund to be used by the EPA in cleaning up hazardous waste sites. The Superfund is made possible by taxes imposed upon the petroleum and chemical industries as well as by an environmental tax on corporations.

At this time there are no identified Superfund sites located within the City of Bryan or in the surrounding area.

Underground Storage Tanks

The EPA has created an Underground Storage Tank (UST) Program under the Resource Conservation and Recovery Act (RCRA). One objective of the program includes identifying existing tanks and requiring that they either be brought up to certain design and operating standards or be closed. Another objective is to determine whether existing tanks have leaked, causing an environmental problem, and if so, requires the owners and/or operators to take corrective action. New tanks must meet strict design and operating standards and the government must be notified when they are installed.

States are given an opportunity to adopt laws and regulations to meet the minimum federal standards for the regulation of UST's, or exceed them. States then become the primary permitting and enforcement authorities for UST's. The Texas Natural Resources Conservation Commission (TNRCC) is the regulatory agency for UST's in Texas. TNRCC has identified 88 leaking petroleum storage tanks within the City of Bryan. Each individual tank is closely monitored by the TNRCC for compliance with the appropriate mandated remediation measures.

Municipal Solid Waste Disposal Regulations

The Texas Solid Waste Disposal Act (SWDA) established the TNRCC as the primary state agency responsible for regulating solid waste management. The TNRCC Municipal Solid Waste Regulations (MSWR) includes the requirements for the management of municipal solid waste in Texas. All state laws and regulations pertaining to municipal solid waste management must comply with minimum federal standards established by the Environmental Protection Agency (EPA).

The TNRCC requires a permit or registration for most activities that involve storage, processing, removal, or disposal of any municipal solid waste. MSW facilities include landfills, water processing facilities, and several others. Landfills are classified as Type I and Type IV. A MSW permit, in Texas, is required for these landfills or an arid exempt landfill. Both federal and state statutes apply to the location, design, and operation of these landfills. Major considerations for landfill location, design, and operation include:

- Possible restrictions on location with respect to airports, wetlands, areas susceptible to seismic events, floodplains, and unstable areas;
- Design requirements for protecting groundwater;
- Requirements for monitoring groundwater and landfill gas around the perimeter of disposed waste;
- Requirements for correcting any groundwater contamination and gas migration, when detected;
- Operating requirements to minimize disease vectors and avoid the production of contaminated water;
- Final cover, closure, postclosure maintenance, and financial assurance for Type I landfills for a period of at least 30 years.

TNRCC provides guidance with its requirements and procedures to local governments through publications and contact agencies for use in landfill planning and maintenance.

The Cities of Bryan and College Station joined together in May 1990 to create the Brazos Valley Solid Waste Management Agency (BVSMA). BVSMA operates the Rock Prairie Road landfill that is the disposal site for municipal solid waste from the City of Bryan and all of Brazos County. Located outside the study area for the Bryan Comprehensive Plan, the Rock Prairie Road landfill is approaching the end of its design life span and will be closed and capped in the near future. BVSMA concluded the study and selected an appropriate location for a new regional solid waste landfill to serve the Brazos County area in future years.

The City of Bryan should contact TNRCC in advance when planning any type of municipal solid waste related activity that may require a permit or application. Technical assistance should be sought to avoid undue difficulties and costs.

Recycling and Resource Recovery

The TNRCC's *Clean Cities 2000* program is designed to help cities achieve the *Clean Texas 2000* goals by encouraging voluntary, comprehensive, environmental efforts that reduce waste and prevent pollution, and include recycling initiatives. This program recognizes local governments that voluntarily develop comprehensive environmental programs that significantly contribute to the *Clean Texas 2000* statewide goals to reduce solid waste disposal and protect the quality of the state's air, land, and water.

The City of Bryan has been a *Clean Cities 2000* member since 1996. The City's goal is to recover 50 percent of targeted materials from residential recycling by the year 2000. The City promotes the use of privately owned recycling drop-off facilities, and has opened the Brazos Valley Biosoils Co-Compost Facility. The Gty promotes several recycling programs to the citizens as effective methods for reducing solid waste. Public education campaigns related to these topics have also been in effect.

The City of Bryan should continue the recycling efforts that are currently in place. As the City nears the goals it has set forth, new goals should be made.

The City should compete for grant funding from the *Clean Cities 2000* program for recycling and composting projects and gain available access to public education materials and public education campaigns to enhance the efforts now in place.

The City should utilize the benefits from the *Clean Cities 2000* program to increase the potential for cooperative efforts with industry, businesses, and other entities to reduce municipal solid waste.

Airport Compatible Land Use Planning

Airport noise levels are often the most noticeable environmental effect produced by an airport. When airport noise reaches a level that is too loud or frequent in occurrence, it may interfere with various activities and the community may object. Airport noise related impacts on the environment are determined through the analysis of noise exposure patterns. This includes an examination of existing noise exposure and an evaluation of this exposure with expected future conditions.

The technique used to define aircraft noise levels involves extensive use of a mathematical model for aircraft noise prediction. The Federal Aviation Administration (FAA), Environmental Protection Agency (EPA), and Department of Housing and Urban Development (HUD) have accepted standards for this analysis.

The impact of airport noise may affect people both physically and psychologically. The EPA has performed numerous studies to determine the impact of aircraft noise on the human environment. The influences that noise has on the human environment should be a primary consideration in airport expansion and development.

Coulter Field, owned and operated by the City of Bryan, is the general aviation airport serving the Bryan area. Located in the northeast section of Bryan's extraterritorial jurisdiction, Coulter Field is developed in accordance with the Airport Master Plan prepared by the City of Bryan in cooperation with the Federal Aviation Administration and Texas Department of Transportation. An updated Airport Master Plan is being prepared and will include an airport noise analysis. The City of Bryan should identify the noise levels in the airport environs and consider the airport noise impact in planning for compatible land use around the airport. Areas around the airport should be zoned to encourage compatible land uses when annexed by the City.

Easterwood Airport, owned and operated by the Texas A&M University System, is the regional commercial service airport serving Brazos County and the surrounding area. Located in the City of College Station near the southwestern part of the City of Bryan, Easterwood Airport serves a significant level of air traffic including commercial and corporate jets. Airport noise impact areas extend onto adjacent property located under the runway approaches including the area north of the airport within the City of Bryan's extraterritorial jurisdiction. The City of Bryan should consider the noise levels in the airport environs and consider the airport noise impact in planning for compatible land use around the airport. Areas near the airport should be zoned to encourage compatible land uses when annexed by the City.

The City of Bryan and/or Brazos County should utilize their statutory authority to establish and enforce height hazard limitations and compatible land use zoning for areas surrounding the airports within the City's corporate area as well as the extraterritorial jurisdiction.

The City, or a joint City-County Airport Zoning Commission, should develop appropriate height hazard limitations and compatible land use zoning in accordance with existing state statutory authority and generally accepted airport land use planning standards.

Urban Stormwater Pollution Discharge Permit Requirements

The Environmental Protection Agency (EPA) authorized the State of Texas, in 1998, to implement its Texas Pollutant Discharge Elimination System (TPDES) program. This state program will carry out the National Pollutant Discharge Elimination System (NPDES) program to control discharges of pollutants to from industries and construction sites into Texas streams, rivers, and lakes. The Texas Natural Resource Conservation Commission (TNRCC) has assumed the responsibilities of the program, with the exception of the authority that the Railroad Commission of Texas has over discharges associated with oil, gas and geothermal exploration and development activities. The TNRCC TPDES program includes all permitting, surveillance/inspection, public assistance, and enforcement regulatory processes associated with six different activities. One of those activities relates to discharges of stormwater associated with city storm sewers.

The EPA has determined that the most environmentally sound and cost-effective way to control the discharge of pollutants in stormwater runoff from industrial facilities is a pollution prevention approach. Therefore, a primary component of all state and federal general permits is the requirement to develop and implement a storm water pollution prevention plan, also referred to as a storm water management plan. The plan is designed to control the pollutants carried by stormwater discharges into surface waters. The major objectives of a stormwater management plan are:

1. to identify sources of pollution potentially affecting the quality of storm water discharges associated with industrial activity from the facility, and
2. to describe and ensure implementation of practices to minimize and control pollutants in storm water discharges associated with industrial activities from the facility and to ensure compliance with the terms and conditions of the general permit.

The City of Bryan should make preparations to implement the National Pollution Discharge Elimination System requirements for municipal separate storm sewer discharges in compliance with the Environmental Protection Agency's Phase II Storm Water Regulations. The City must apply for permit coverage by August 7, 2001, and obtain an NPDES municipal storm water general permit by May 31, 2002.

Jurisdictional Wetlands

Wetlands are areas that are inundated by surface or ground water with a frequency to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions. Typical wetlands include swamps, bogs, marshes, and similar areas such as sloughs, potholes,

wet meadows, river overflows, mud flats, and natural ponds. Ecologically, wetlands are unique and critical habitat for many species of plants and wildlife. Identification of wetlands is performed by the U.S. Army Corps of Engineers, and permits under Section 402 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 are required for activities impacting identified wetlands.

Wetlands in the Bryan area are found within riparian areas along Carters and Thompson Creeks and their tributaries; in riverine areas along the Brazos and Navasota Rivers; and other natural depressions and low-lying areas where runoff water ponds during wet seasons of the year. Coordination with the U.S. Fish and Wildlife Service and U.S. Army Corps of Engineers is recommended during planning for future development to establish the identification of wetlands that may be impacted by the development. Planning for future development should include coordination with these agencies for evaluation of potential wetlands in specific project areas on a case by case basis.

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